

F00491

NOAA FORM 76-35A	
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE	
DESCRIPTIVE REPORT	
Type of Survey	Hydrographic/ Side Scan Sonar/Multibeam
Field No.	S-B902-RU
Registry No.	F00491
LOCALITY	
State	Massachusetts
General Locality	Taunton River
Locality	Fall River harbor
2002	
CHIEF OF PARTY LCDR Andrew L. Beaver, NOAA	
LIBRARY & ARCHIVES	
DATE	

B902**NOAA Ship RUDE****December 12, 2002**

NOAA FORM 77-28 U.S. DEPARTMENT OF COMMERCE (11-72) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION		REGISTRY NUMBER: F00491																																										
HYDROGRAPHIC TITLE SHEET																																												
INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.		FIELD NUMBER: N/A																																										
<table><tr><td>State:</td><td colspan="2">Massachusetts</td></tr><tr><td>General Locality:</td><td colspan="2">Taunton River, Massachusetts</td></tr><tr><td>Sub-Locality:</td><td colspan="2">Fall River Harbor</td></tr><tr><td>Scale:</td><td>1:10,000</td><td>Date of Survey 8 Aug. 2002 - 12 Aug. 2002</td></tr><tr><td>Instructions Dated:</td><td>02 Aug. 2002</td><td>Project Number: S-B902-RU</td></tr><tr><td>Vessel:</td><td colspan="2">NOAA Ship RUDE, S-590</td></tr><tr><td>Chief of Party:</td><td colspan="2">LCDR Andrew L. Beaver, NOAA</td></tr><tr><td>Surveyed by:</td><td colspan="2">RUDE Personnel</td></tr><tr><td>Soundings by:</td><td colspan="2">Reson SeaBat 8125, Odom Echotrac MK II</td></tr><tr><td>Graphic record scaled by:</td><td colspan="2">RUDE Personnel</td></tr><tr><td>Graphic record checked by:</td><td colspan="2">RUDE Personnel</td></tr><tr><td>Protracted by:</td><td>N/A</td><td>Automated Plot: HP-750C HP DesignJet 2500</td></tr><tr><td>Verification by:</td><td colspan="2">Atlantic Hydrographic Branch Personnel</td></tr><tr><td>Soundings in:</td><td colspan="2">Feet at MLLW</td></tr></table>			State:	Massachusetts		General Locality:	Taunton River, Massachusetts		Sub-Locality:	Fall River Harbor		Scale:	1:10,000	Date of Survey 8 Aug. 2002 - 12 Aug. 2002	Instructions Dated:	02 Aug. 2002	Project Number: S-B902-RU	Vessel:	NOAA Ship RUDE, S-590		Chief of Party:	LCDR Andrew L. Beaver, NOAA		Surveyed by:	RUDE Personnel		Soundings by:	Reson SeaBat 8125, Odom Echotrac MK II		Graphic record scaled by:	RUDE Personnel		Graphic record checked by:	RUDE Personnel		Protracted by:	N/A	Automated Plot: HP-750C HP DesignJet 2500	Verification by:	Atlantic Hydrographic Branch Personnel		Soundings in:	Feet at MLLW	
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Remarks: <i>1) All Times are UTC.</i> <i>2) This is a basic Hydrographic Survey under the Navigable Area Concept.</i> <i>3) Projection is UTM Zone 19, Northern Hemisphere.</i> <i>Notes in bold red lettering were made, during office processing.</i>																																												

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** Data filed with original field records*

DESCRIPTIVE REPORT
~~HOMELAND SECURITY PROJECT REPORT~~
to accompany
~~HYDROGRAPHIC SURVEY S-B902-RU~~
F00491

Year of Survey: 2002
NOAA Ship RUDE
LCDR Andrew Beaver, Commanding

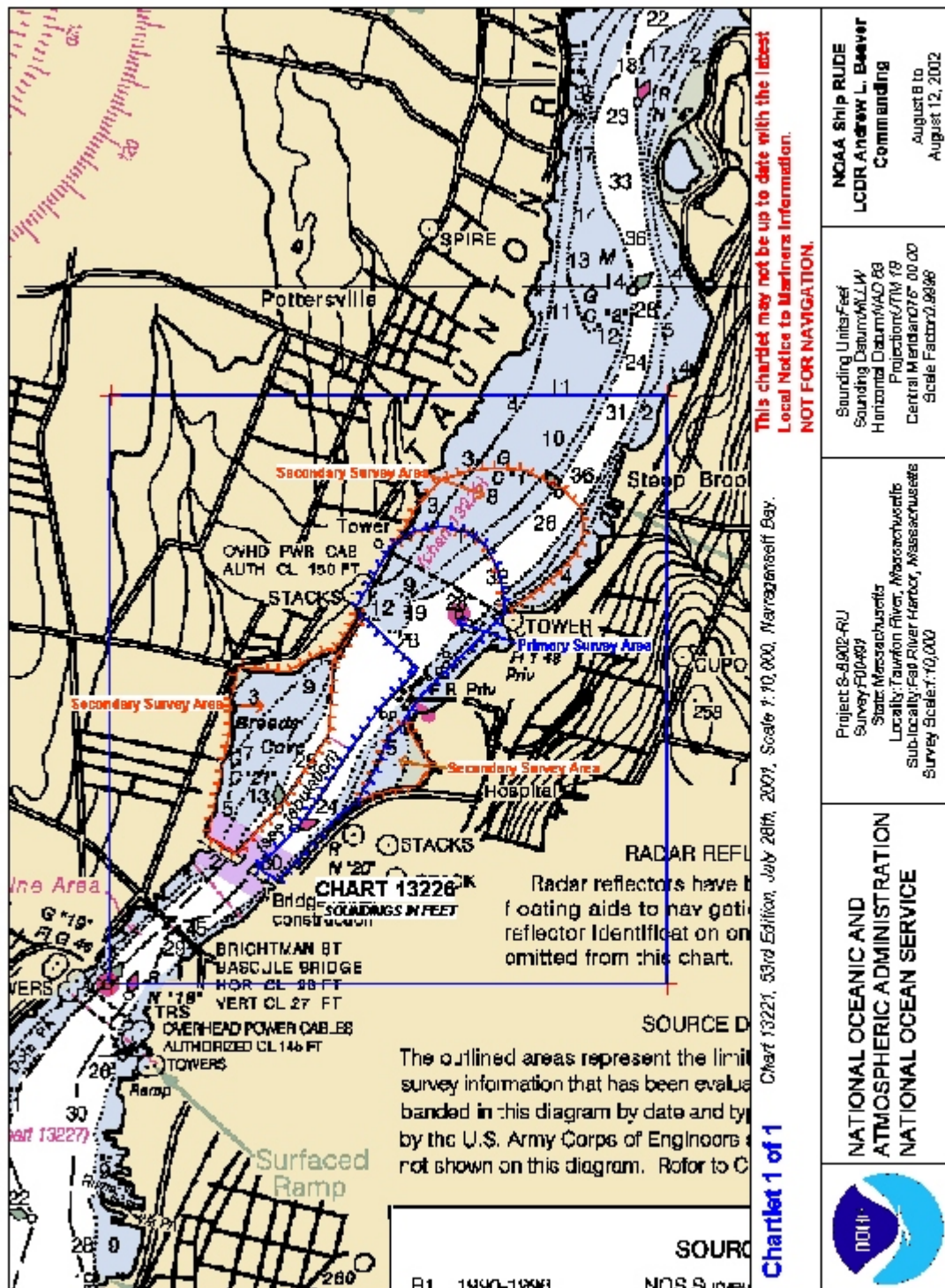
A. AREA SURVEYED

This homeland security project was conducted in accordance with Hydrographic Survey Letter Instructions for project S-B902-RU, Fall River Harbor, Massachusetts. The original instructions are dated received Aug 02, 2002 (appendix B). *

This project is being conducted to provide side scan sonar and/or multibeam data in support of port operations in Fall River Harbor, MA. and NOAA National Ocean Service (NOS) nautical charts. While the hydrographic survey was assigned an “S” survey number, the project instructions do not mention Homeland Security or the requirements of the Naval Oceanographic Office (NAVOCEANO). This project will respond to requests in support of safe and efficient movement of Liquid Natural Gas (LNG) carriers. This project is conducted in accordance with National Ocean Service (NOS) requirements for a basic hydrographic survey.

For complete survey limits, see the chartlet on the following page.

****Data filed with original field records***



B. DATA ACQUISITION AND PROCESSING EQUIPMENT

See also the Evaluation and Analysis Report

B.1. EQUIPMENT

No unusual configuration or problems were encountered. Refer to section A of the 2002 field season Data Acquisition and Processing Report (DAPR)* for detailed equipment and vessel configuration information.

B.2. QUALITY CONTROL**B.2.1. Side Scan Sonar Control**

Daily confidence checks were made by observing the outer ranges of the side scan sonar images. A good check consisted of distinguishing contacts or bottom textures across the entire range of the side scan trace. All degraded returns (as from boat wakes or thermocline) were rejected and the data re-acquired. No unusual problems were encountered.

B.2.2. Shallow Water Multibeam Quality Control

There were no faults with the SWMB system which affected data integrity. Refer to section B.1. of the 2002 field season DAPR* for detailed discussion of the SWMB system calibrations, data acquisition, and data processing.

A histogram was created showing the distribution of soundings on the preliminary smooth sheet based on their beam number (Figure 1). The spikes in this histogram seen in the outer beams illustrate a statistical tendency of shoal biasing algorithms. Refraction due to temperature and salinity differences in the water column primarily influences the outer beams. Refraction often caused the outer beams to appear more shoal than the inner beams. The shoal biasing algorithm preferentially chooses the beams most susceptible to refraction and ray tracing errors. The average depth by beam number histogram (Figure 2) illustrates the difference in average depth between the inner beams and the outer beams. The outer beams are seen to be generally more shoal although some of this influence is due to shoreline influence

B.2.3. Crossline Comparison

For the crossline comparison, the preliminary smooth sheet soundings from narrow regions (<50 meters) around the crosslines were obtained and compared in Microsoft Excel graphs (See Separates V, Shallow Water Multibeam Crossline Comparison). No significant differences were observed. The small differences where observed, could be attributed to dynamically variable topography.

**Data filed with original field records*

B.3. CORRECTIONS TO ECHO SOUNDING

All methods and instruments used were described in section C.1. of the 2002 field season DAPR.* All sound velocity data is submitted with the digital data submission.

C. VERTICAL AND HORIZONTAL CONTROL

C.1. Vertical Control

The tidal datum for this project is the Mean Lower Low Water (MLLW). The operating tide station at Providence, RI (845-4000) served as control for datum determination. Tidal zoning for this project is consistent with the Letter Instructions (appendix B).* A Request for Approved Tides letter was sent to N/OPS1 on 16 December, 2002 (appendix D.)*

Approved tides and zoning were applied to survey in CARIS during office processing

**Data filed with original field records*

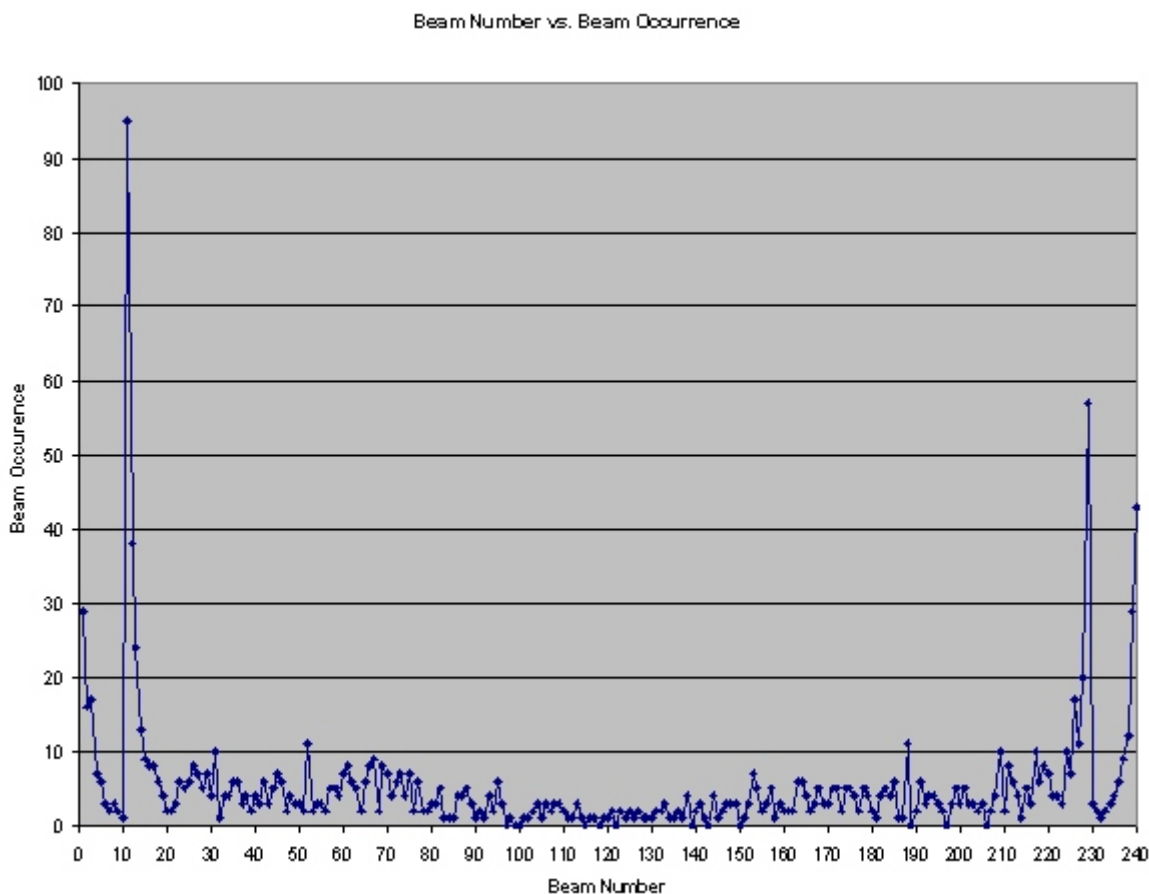


Figure 1: Preliminary Smooth Sheet data viewing occurrence by beam number.

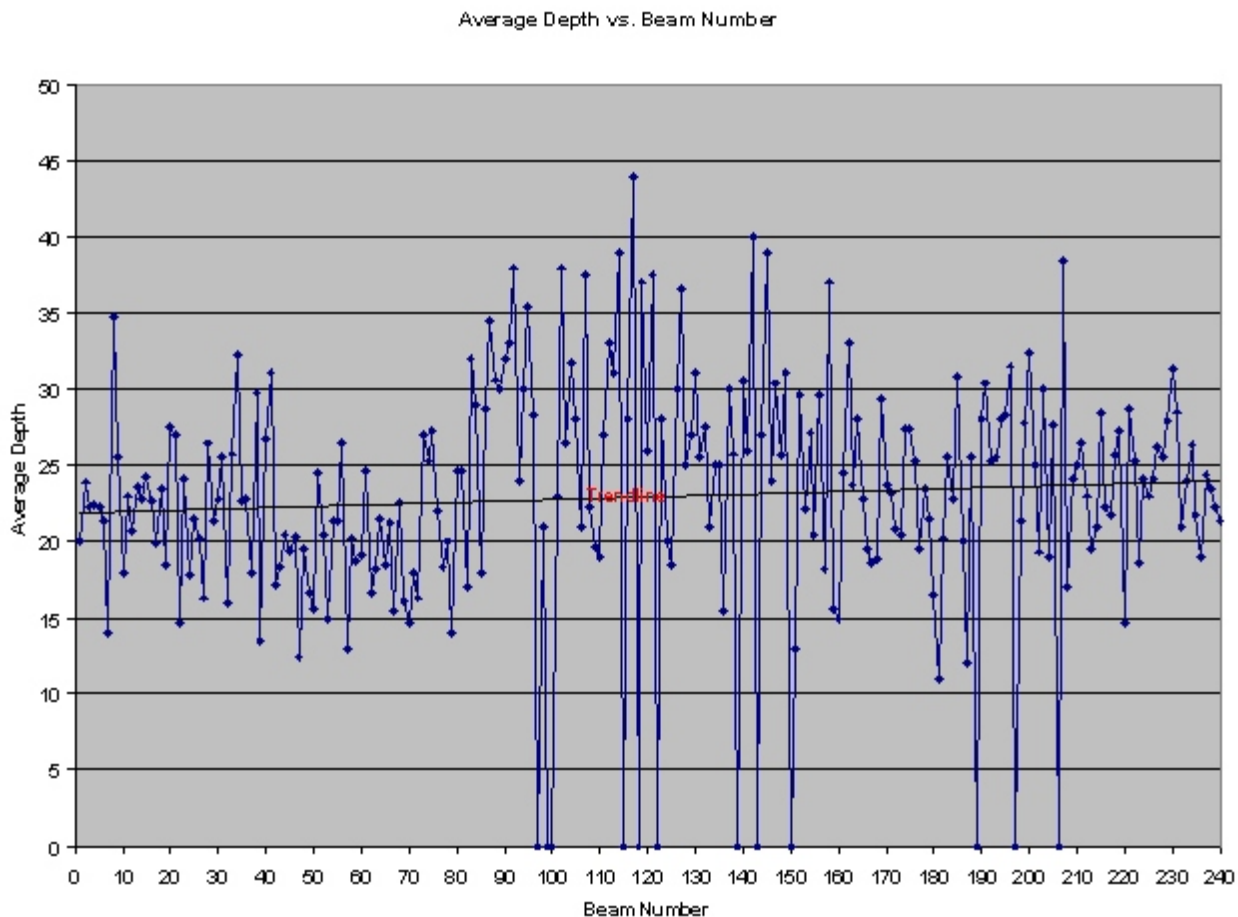


Figure 2: Preliminary Smooth Sheet data viewing total average depths by beam number.

C.2. HORIZONTAL CONTROL

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 19.

Sounding positional control was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The primary DGPS beacon used for this survey was Acushnet, MA. Chatham, MA was used as secondary station if the primary site became disabled. No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored daily. Data was re-acquired if the HDOP value exceeded 2.5.

D. RESULTS AND RECOMMENDATIONS

D.1 Item Investigations

No Automated Wreck and Obstruction Information System (AWOIS) items were assigned to this project.

D.2 Charting Recommendations

No significant contacts were identified during this survey. Refer to Pydro PSS B902_PSS (:\\B902\\PSS in digital submission) for survey details. *

D.3 DToNs

There were no potential Dangers To Navigation (DToNs) identified within the S-B902 survey limits. Refer to Pydro PSS B902_PSS (:\\B902\\PSS in digital submission) for survey details.*

D.4 Charting Discrepancies

Survey soundings were primarily either similar or deeper than charted depths. 50.6% of survey soundings were deeper than charted depths. 47.2% of survey soundings were + 2 feet of charted depths. 2.2% of survey soundings were found to be more shoal than charted depths. Refer to MapInfo workspace B902_Difference_Map (:\\B902\\Plots in digital submission) for survey details. *

Difference mapping displayed four areas of shoaling. The southernmost of these areas is southwest of the green can "21" and west of the channel. This area displays an extension of shoaling from the 18' curve towards the channel. The shoaling indicated northwest of the green can "21" by the difference map is an anomaly of the natural neighbor interpolation algorithm generated from rapid shoaling between the charted 25' depth and the 18' curve. The shoaling on the east side of the channel north of the turning basin and the 38' charted depth is also an anomaly of the natural neighbor interpolation algorithm generated from rapid shoaling north of the 38' charted depth. The shoaling on the east side of the channel east of the charted Private flashing yellow 4 seconds buoy is a shoaling trend extending towards the channel from the 12' and the 18' curves. *Concur*

**Data filed with original field records*

***Green can "21" was positioned approx. 212 meters northeast of its currently charted position when the hydrographer wrote this report.*

E. Approval Sheet

**S-B902-RU
Taunton River, Massachusetts
Fall River Harbor Massachusetts**

Field operations for this Basic Hydrographic Survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, this Project Report, and accompanying records and data are approved.


This survey is adequate for application to the relevant NOS nautical charts.

Respectfully,

Submitted:



LTJG Jeff D. Kelley, NOAA
Field Operations Officer



LCDR Andrew L. Beaver, NOAA
Commanding Officer

N/CS33-38-03

LETTER TRANSMITTING DATA

TO:

☐ CHIEF, DATA CONTROL GROUP, N/CS3x1
NOAA / NATIONAL OCEAN SERVICE
STATION 6815, SSMC3
1315 EAST-WEST HIGHWAY
☐ SILVER SPRING, MARYLAND 20910-3282

DATA AS LISTED BELOW WERE FORWARDED TO YOU
BY (Check)

☐ ORDINARY MAIL ☐ AIR MAIL
☐ REGISTERED MAIL ☒ EXPRESS
☐ GBL (Give number) _____

DATE FORWARDED 10/07/2003

NUMBER OF PACKAGES 1

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

F00491

Massachusetts, Taunton River, Fall River Harbor

ONE TUBE CONTAINING THE FOLLOWING:

- 1 SMOOTH SHEET FOR SURVEY F00491
(Page Size Plot found in DR)
- 1 H-DRAWING ON MYLAR FOR CHART 13227
- 1 H-DRAWING ON MYLAR FOR CHART 13226
- 1 DESCRIPTIVE REPORT FOR F00491

FROM: (Signature)

Robert R. Theil

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

☐ NOAA \ NATIONAL OCEAN SERVICE
ATLANTIC HYDROGRAPHIC BRANCH N/CS33
439 WEST YORK STREET
NORFOLK, VA. 23510-1114



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: December 20, 2002

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: S-B902-RU-2002

HYDROGRAPHIC SHEET: F00491

LOCALITY: Taunton River, Fall River Harbor, MA

TIME PERIOD: August 8 - 12, 2002

TIDE STATION USED: 844-7386 Fall River, Hope Bay, MA
Lat. $41^{\circ} 42.3'N$ Lon. $71^{\circ} 9.8'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.395 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: NAR13

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units
(meters), relative to MLLW and on Greenwich Mean Time.

fa

SKG

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Printed on Recycled Paper



**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR F00491 (2002)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. DATA ACQUISITION AND PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

Hydrographic Processing System
MicroStation J, version 07.0104.16
I/RAS B, version 07.01.000.18
NADCON, version 2.10
MapInfo, version 6.5
CARIS HIPS/SIPS 2000
PYDRO, version 2.9.4

The smooth sheet was plotted using a Hewlett Packard DesignJet 2500CP plotter.

COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled, "Changes to Hydrographic Survey Processing", dated May 24, 1995.

**D. COMPARISON WITH CHART 13221 (53rd Edition, July 28/01)
13227 (5th Edition, Aug 26/00)
13226 (5th Edition, Aug 26/00)**

Hydrography

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D. of the Descriptive Report. Attention is directed to the following:

1. A charted dolphin, in Latitude 41°44'06.45"N, Longitude 71°08'26.65"W, originates with an unknown source. This feature was investigated by the field unit; however, the disposition was not addressed in the Descriptive Report. After office examination of field records the feature is considered disproved. It is recommended that the feature be deleted from the chart.

2. A charted dolphin, in Latitude 41°43'58.35"N, Longitude 71°08'37.42"W, originates with an unknown source. The hydrographer did not make a charting recommendation for this feature. Side scan sonar coverage in the vicinity is not adequate to disprove the feature. No change in charting status is recommended.

Except as noted above, the present survey is adequate to supersede the charted hydrography within the common area.

CONTROLLING DEPTHS

A conflict exists between the charted controlling depths and the present survey in the vicinity of Latitude 41°44'05"N, Longitude 71°08'47"W, in the Fall River Channel Turning Basin. The present survey shows shoaling along the turning basin's western edge, with depths to 23 feet where the published controlling depth is 24.4 feet.

No conflicts exist with the charted controlling depths in the Brightman St. Bridge to Turning Basin section of the river channel.

MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. The following NOS Charts were used for compilation of the present survey:

13227 (5th Edition, Aug 26/00)
13226 (5th Edition, Aug 26/00)

ADEQUACY OF SURVEY

This is an adequate hydrographic/side scan sonar/multibeam survey. No additional field work is recommended.

A handwritten signature in blue ink, appearing to read "Bryan Chauveau", with a stylized flourish extending to the right.

Bryan Chauveau
Contract Hydrographer
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
F00491

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.



Date: 10-1-3

Robert R. Hill
Cartographer
Atlantic Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Approved:



Date: 10/2/03

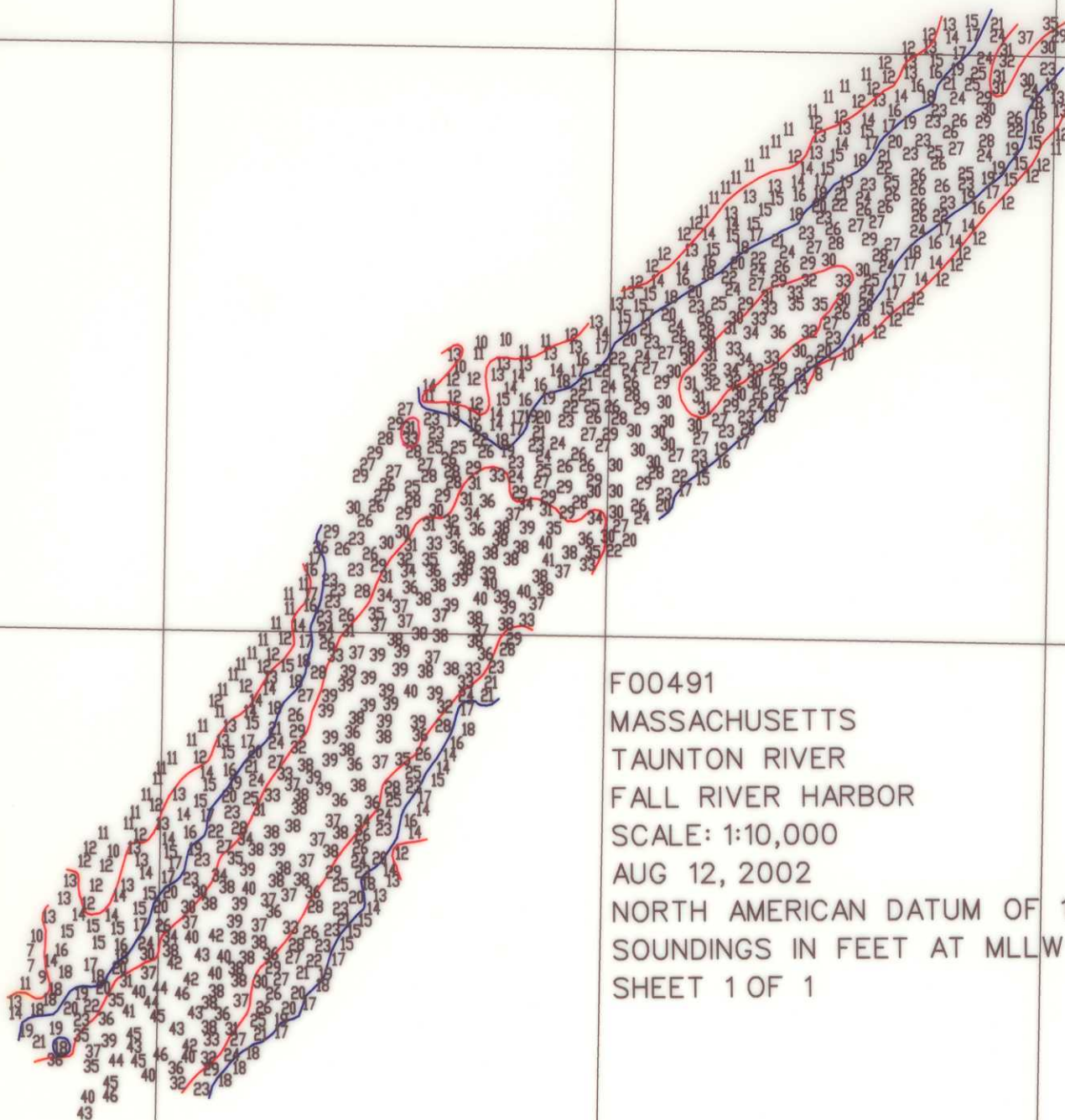
Emily B. Christman
Commander, NOAA
Chief, Atlantic Hydrographic Branch

71° 09'00"

71° 08'30"

71° 08'00"

41° 44'30"



FO0491

MASSACHUSETTS

TAUNTON RIVER

FALL RIVER HARBOR

SCALE: 1:10,000

AUG 12, 2002

NORTH AMERICAN DATUM OF 1983

SOUNDINGS IN FEET AT MLLW

SHEET 1 OF 1

41° 44'00"

41° 43'30"

71° 09'00"

71° 08'30"

71° 08'00"

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. F 00 491

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

[illegible]